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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/576,227

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Riki Okamoto

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EXAMINER

YANG, JIE

ART UNIT

PAPER NUMBER

1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/576,227	Applicant(s) OKAMOTO ET AL.	
	Examiner JIE YANG	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 08 September 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,9-11 and 16-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,9-11 and 16-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/8/2009 has been entered.

Status of the Claims

Claims 2-8, and 12-15 have been cancelled; claims 1 and 9 have been amended; claims 16-18 are added as new claims; and claims 1, 9-11, and 16-18 are pending in application.

Status of the Previous Rejection

Previous rejection of claims 1, 3, 5, 9-11 under 103 (a) are withdrawn in view the applicant's amendment filed on 9/8/2009. However, upon further consideration, a new ground(s) of rejection is made as following.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutomu (JP2001-342543 A, thereafter JP'543) in view of Yasuhara et al (US 6,364,968 B1, thereafter US'968).

Regarding claim 1, JP'543 teaches a high strength steel sheet with an excellent boring property and ductility (Title and abstract of JP'543), which reads on the high-strength steel sheet excellent in hole-expandability and ductility as recited in the instant claim. The composition comparison between JP'543 and the instant invention is listed in the following table. All of the composition ranges disclosed by JP'543 overlap the composition ranges of the instant invention, which is a prima facie case of obviousness. SEE MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the claimed compositions of C, Si, Al, Mn, P, S, N, Mg, O, Ti/Nb, and Fe from the composition disclosed by JP'543, because JP'543 discloses the same utility throughout the disclosed ranges.

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Element	From instant Claim 1 (in wt%)	JP'543 (in wt%)	Overlapping range (in wt%)
C	0.01-0.20	0.01-0.20	0.01-0.20
Si	≤1.5	0.3-1.5	0.3-1.5
Al	≤1.5	0.002-0.07	0.002-0.07
Mn	0.5-3.5	0.55-2.5	0.55-2.5
P	≤0.2	≤0.10	≤0.10
S	0.0005-0.009	≤0.009	0.0005-0.009
N	≤0.009	≤0.010	≤0.009
Mg	0.0006-0.01	0.0005-0.01	0.0006-0.1
O	≤0.005	Trace amount	Trace amount
Ti and/or Nb	Ti: 0.01-0.20; Nb:0.01-0.10	Ti:0.003-0.25 and/or Nb:0.003-0.04	Ti:0.01-0.20 and/or Nb:0.01-0.04
Fe	Balance	Balance	Balance

JP'543 does not specify the steel having a structure primarily comprising bainite. However, the microstructure of this kind steel is controllable, which is evidenced by US'968. US'968 teaches a high-strength steel sheet having excellent stretch flangeability with a fine bainite structure and having a similar composition as disclosed in JP'543 (Abstract and claims 1-6 of US'968). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the heat-treatment process of US'968 to the steel of JP'543 in order to obtain a desired fine bainite structure as claimed because US'968 teaches the steel with a fine bainite structure having high tensile strength (990-1210MPa) and excellent in hole-expandability (Hole-expanding ratio: 155%-170%) (Refer to Samples No.2-4 and 7 in table 3 and samples

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No.3, 6, 7, and 13 in table 5 of US'968). These samples meet the limitation of strength exceeding 980N/mm^2 as recited in the instant claim.

Regarding the equations (1) to (7) in the instant claim 1, they fully depend on the alloy compositions. It is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, In re Cooper and Foley 1943 C.D.357, 553 O.G.177; 57 USPQ 117, Taklatwalla v.Marburg. 620 O.G.685, 1949 C.D.77, and In re Pilling, 403 O.G.513, 44 F(2) 878, 1931 C.D.75. In the instant case, in the absence of evidence to the contrary, the selection of the proportions of elements, Mg, O, S, Mn, Si, Al, C, Ti, and Nb from JP'543 in order to meet the equations (1) to (7) would appear to require no more than routine investigation by those ordinary skilled in the art. In re Austin, et al., 149 USPQ 685, 688.

Regarding claim 16, which depends on claim 1, JP'543 teaches that steel sheet is characterized by containing between $1.0 \times 10^3 - 1.0 \times 10^7$ pieces/ mm^2 of composite precipitates of MgO and (Nb,Ti)N of not smaller than $0.05\mu\text{m}$ and not larger than $5\mu\text{m}$ (Claim 2 of JP'543), which overlaps the composite precipitates: $5.0 \times 10^2 - 1.0 \times 10^7$ pieces/ mm^2 of MgO, MgS and (Nb,Ti)N of not

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smaller than 0.05 μ m and not larger than 3.0 μ m as recited in the instant claim.

Claims 9-11, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'543.

Regarding claim 9, which claims the same alloy composition ranges as recited in the instant claim 1, all the composition ranges disclosed by JP'543 overlap the composition ranges of the instant invention, which is a prima facie case of obviousness. SEE MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the claimed compositions of C, Si, Al, Mn, P, S, N, Mg, O, Ti/Nb, and Fe from the composition disclosed by JP'543, because JP'543 discloses the same utility throughout the disclosed ranges (refer to the rejection for the instant claim 1). JP'543 teaches the steel having a structure of mainly a ferrite and the residue being a bainite (Abstract of JP'543), which reads on the structure of primarily comprising ferrite and bainite as recited in the instant claim. JP'543 teaches the steel having a tensile strength 590N/mm² or above (abstract of JP'543), which is the same strength range as recited in the instant claim.

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Regarding the equations (1)-(4), and (8) in the instant claim 9, they fully depend on the alloy compositions. It is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, In re Cooper and Foley 1943 C.D.357, 553 O.G.177; 57 USPQ 117, Taklatwalla v.Marburg. 620 O.G.685, 1949 C.D.77, and In re Pilling, 403 O.G.513, 44 F(2) 878, 1931 C.D.75. In the instant case, in the absence of evidence to the contrary, the selection of the proportions of elements, Mg, O, S, Mn, Si, Al, and C from JP'543 in order to meet the equations (1) to (4), and (8) would appear to require no more than routine investigation by those ordinary skilled in the art. In re Austin, et al., 149 USPQ 685, 688.

Regarding the limitation of crystal grain ratio of short diameter to long diameter in the instant claims 10 and the limitation of diameter of ferrite crystal grains in the instant claim 11, which are features depend on the composition of alloy and processes of heat treatment. As discussed in the rejection for the instant claim 9, JP'543 teaches the similar high-strength steel sheet with all the composition ranges overlapping the composition ranges of the instant invention. JP'543 further teaches the similar heating temperature range, starting cooling temperature, cooling rate, cooling time, and coiling temperature

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range (table 2 and 4 of JP'543) as recited in the instant invention (for example, table 13-16 of the instant specification). Therefore, similar features as claimed in the instant claims 10 and 11 would be highly expected in the steel sheet of JP'543. MPEP 2112.01.

Regarding claim 17, which depends on claim 9, JP'543 teaches that steel sheet is characterized by containing between $1.0 \times 10^3 - 1.0 \times 10^7$ pieces/mm² of composite precipitates of MgO and (Nb,Ti)N of not smaller than 0.05 μ m and not larger than 5 μ m (Claim 2 of JP'543), which overlaps the composite precipitates: $5.0 \times 10^2 - 1.0 \times 10^7$ pieces/mm² of MgO, MgS and (Nb,Ti)N of not smaller than 0.05 μ m and not larger than 3.0 μ m as recited in the instant claim.

Regarding claim 18, the equation of hole-expandability λ (%) fully depends on the tensile strength. It is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, In re Cooper and Foley 1943 C.D.357, 553 O.G.177; 57 USPQ 117, Taklatwalla v.Marburg. 620 O.G.685, 1949 C.D.77, and In re Pilling, 403 O.G.513, 44 F(2) 878, 1931 C.D.75. In the instant case, in the absence of evidence to the contrary, JP'543 teaches the steel having a tensile strength 590N/mm² or above (abstract of JP'543),

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which is the same strength range as recited in the instant invention. Therefore, the same level of hole-expandability λ (%) would be expected in the steel sheet of JP'543. MPEP 2112.01.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is rejected on the ground of nonstatutory obviousness type double patenting as being unpatentable over claims 1 and 2 of copending application US 2006/0231166 A1.

Although the conflicting claims are not identical, they are not patentable distinct from each other because claims 1 and 2

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of US2006/0231166 teach a similar alloy with the major alloy composition overlapping the composition ranges as recited in the instant claim 1. The Equations <1> to <3> are the same Equations (5)-(7) of the instant claim 1. Claims 1 and 2 of US2006/0231166 teach the steel having strength of at least 980N/mm^2 , which is the same strength range as recited in the instant claim. Thus, no patentable distinction was found in instant claim 1 compared with claims 1-2 of US2006/0231166.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

Applicant's arguments with respect to claims 1, 9-11, and 16-18 have been considered but are moot in view of the new ground(s) of rejection. Regarding the arguments related to the amended features, the Examiner's position is stated as above.

In the remark, the Applicant argues:

1, JP'543 does not teach or suggest steel sheets having a structure of primarily bainite, nor hole expandability and ductility of bainite steel sheet. The cited references, alone or in combination, do not teach or suggest achieving high hole-expandability and/or ductility in bainite steel sheets (refer to the Appendix A).

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2, No recorded arts teach or suggest controlling the oxygen level O to no more than 0.005wt% and in the present invention, O is one of the most important added elements and is controlled to no more than 0.005wt%.

3, The steel sheet may have either (i) a structure of primarily bainite (claim 1) or (ii) a structure of primarily ferrite and bainite (claim 9) according different Equations, for example, Equations (1)-(3) and (5)-(7) for species (i), and Equations (1)-(3) and (8) for species (ii).

In response:

Regarding arguments 1 and 3, the Examiner notes that the amended claims 1 and 16 claim a high-strength steel sheet excellent in hole-expandability and ductility with a structure primarily comprising bainite. The newly recorded reference US'968 teaches a high-strength steel sheet having excellent stretch flangeability with a fine bainite structure (Abstract and claims 1-6 of US'968). The Examiner notes that US'968 teaches the steel with a fine bainite structure having high tensile strength (990-1210MPa) and excellent in hole-expandability (Hole-expanding ratio: 155%-170%) (Refer to Samples No.2-4 and 7 in table 3 and samples No.3, 6, 7, and 13 in table 5 of US'968), which reads the high hole-expandability and/or ductility of bainite steel sheets as recited in the instant claims. Detail rejection and the motivation for combining JP'543 with US'968 can refer to the rejection for the instant claims above. Still regarding the argument 3, JP'543 teaches a high strength steel sheet with an excellent boring property and ductility and JP'543 teaches the steel having a structure of mainly a ferrite and the residue being a bainite, which reads on the structure of primarily comprising ferrite and bainite as recited

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in the instant claim 9. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose desired structure, for example primarily bainite according JP'543 in view of US'968 or primarily ferrite and bainite according JP'543 in order to obtain steel sheet with desired properties.

Regarding the argument 2, both JP'543 and US'968 limit oxygen in the trace impurity amount, which reads on the limitation of oxygen not more than 0.005wt%. although JP'543 and US'968 do not specify the effect of high oxygen, but, it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose low oxygen according the disclose of JP'543 and US'968 for the high strength steel sheet. The Examiner further notes that a high oxygen content is not a normal condition for the high strength steel sheet, which is evidenced by the instant specification. The most comparison samples in the instant specification (table 1-16 of the instant specification) have the oxygen no more than 0.005wt%.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

/Roy King/
Supervisory Patent Examiner, Art Unit 1793